



## Department of Electrical and Electronics Engineering

### EE8451-Linear Integrated Circuits & Applications

#### Unit I - MCQ Bank

1. An IC has ..... size
  - A) Very large
  - B) Large
  - C) Extremely small**
  - D) None of the aboveAnswer : (C)
  
2. ICs are generally made of .....
  - A) Silicon**
  - B) Germanium
  - C) Copper
  - D) None of the aboveAnswer : (A)
  
3. The most popular form of IC package is .....
  - A) DIL
  - B) Flatpack**
  - C) TO-5
  - D) None of the aboveAnswer : (B)
  
4. An audio amplifier is an example of .....
  - A) Digital IC
  - B) Linear IC**
  - C) Both digital and linear IC

D) None of the above

Answer : (B)

5. A transistor takes ..... inductor on a silicon IC chip

**A) Less space than**

B) More space than

C) Same space as

D) None of the above

Answer : (A)

6. Operational amplifiers use .....

A) Linear ICs

**B) Digital ICs**

C) Both linear and digital ICs

D) None of the above

Answer : (B)

7. Which of the following is most difficult to fabricate in an IC?

A) Diode

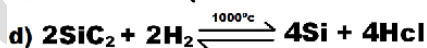
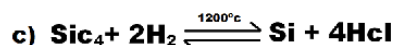
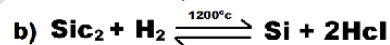
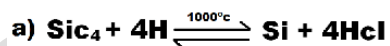
B) Transistor

C) FET

**D) Capacitor**

Answer : (D)

8. Find the basic chemical reaction used for Epitaxial growth?



Answer: (C)

9. Which component is added to the p-type material in order to get the impurity concentration in epitaxial films?

- A) **Bi-Borane ( $B_2h_2$ )**
- B) Phosphine ( $Ph_3$ )
- C) Boron Chloride ( $Bcl_3$ )
- D) Phosphorous Pentoxide ( $P_2o_5$ )

Answer: (A)

10. Which of the following is used to obtain silicon crystal structure while fabricating Integrating Circuits?

- A) Oxidation
- B) **Epitaxial Growth**
- C) Photolithography
- D) Silicon Wafer Preparations

Answer: (B)

11. Mention the chemical reaction for oxidation process

- A)  **$Si + 2h_2o \rightarrow SiO_2 + 2h_2$**
- B)  $Si + O_2 \rightarrow SiO_2$
- C)  $2si + 2h_2o \rightarrow 2sio_2 + 2h_2$
- D)  $2Si + 2H_2O + 2O_2 \rightarrow 2SiO_2 + 2H_2 + O_2$

Answer: (A)

12. At what temperature should the oxidation process be carried out to get an oxide film of thickness 0.02 to  $2\mu m$ ?

- A)  $0-105^\circ c$
- B)  **$950-1115^\circ c$**
- C)  $200-850^\circ c$
- D)  $350-900^\circ c$

Answer: (B)

13. In Czochralski crystal growth process, the materials are heated up to

- A) 950°C
- B) 1000 °C
- C) 1420°C**
- D) 1200°C

Answer: (C)

14. If the thickness of wafer after all polishing steps in silicon wafer preparation is 23-40 mils. Find its raw cut slice thickness?

- A) 16-32 Mils**
- B) 23-40 Mils
- C) 8-12 Mils
- D) None Of The Mentioned

Answer: (A)

15. Find the area of artwork done for a monolithic chip of area 30mil × 30mil.

- A) 16 Cm × 16 Cm
- B) 60 Cm × 60 Cm
- C) 12 Cm × 12 Cm
- D) 36 Cm × 36 Cm**

Answer: (D)

16. Find the coating material used for photo etching process along with its thickness range.

- A) Kodak Photoresist (5000-10000Å)**
- B) Kodak Photoresist (1000-5000Å)
- C) Kodak Photo Etchant (1000-5000 Å)
- D) Kodak Photo Etchant (500-1000 Å)

Answer: (A)

17. Which type of etching process is preferred to make the photoresist immune to etchants?

- A) None Of The Mentioned
- B) Wet Etching
- C) Plasma Etching**
- D) Chemical Etching

Answer: (C)

18. Which of the following is added as an impurity to p-type material in diffusion process?

- A) Phosphorous Pentaoxide ( $P_2O_5$ )
- B) Phosphorous Oxychloride ( $POCl_3$ )
- C) Boron Oxide ( $B_2O_3$ )**
- D) None Of The Mentioned

Answer: (C)

19. What is the advantage of using Ion implantation process?

- A) Lateral Spreading Is More
- B) Performed At High Temperature
- C) Beam Current Controlled From Outside**
- D) Performed At Low Temperature

Answer: (C)

20. The major disadvantage of PN-junction isolation technique is:

- A) Formation Of Parasitic Resistance
- B) Formation Of Parasitic Capacitance**
- C) Formation Of Isolation Island
- D) None Of The Mentioned

Answer: (B)

21. Pick out the incorrect statement

Aluminium is usually used for metallization of most IC as it offers

- A) Relatively a good conductor
- B) High resistance

**C) Good mechanical bond with silicon**

D) Deposition of aluminium film using vacuum deposition

Answer: (C)

22. What type of packing is suitable for Integrated Circuits?

A) Metal Can Package

B) Dual-In-Line Package

C) Ceramic Flat Package

**D) All Of The Mentioned**

Answer: (D)

23. Metal can IC packages are available in

A) 42 Leads

B) 16 Leads

**C) 12 Leads**

D) 24 leads

Answer: (C)

24. Which method is most suitable for silicon crystal growth in silicon wafer preparation?

A) Float Zone Process

B) Bridgeman-Stockbarger Method

**C) Czochralski Crystal Growth Process**

D) Laser heated pedestal growth

Answer: (C)

25. Name the process that is used to overcome the increase in collector series resistance, which occurs due to the presence of collector contact at the top of integrated transistor.

**A) Buried N<sup>+</sup> Layer**

B) Buried P<sup>+</sup> Layer

C) Triple Diffused Layer

D) Buried epitaxial layer

Answer: (A)

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